Since both the MFF and AMFF are convex, a unique tangent plane is existed at any point on MFF or AMFF. This guarantees to find a unique maximum flow on the MFF or AMFF for a given price vector, i.e., a unique tangent plane of MFF or AMFF that is perpendicular to a given price vector.

A check is made at block 670 against changes in the network, such as an expansion of the network. If the network is changed the method returns to block 620; otherwise it goes to block 680. Another check is made at block 680 against whether reconfigurations are needed. Usually, such reconfiguration are pre-planned and therefore can be made at a predetermined time.

The network usually changes over a relatively long period, such as months, thus the loop from 620 to 670 may happen only once in several months, while the loop from 650 to 680 may happen once in several days. The loop 620-670 is carried out by off-line computation which traces the network changes, while the loop 650-680 is on-line flow reallocation procedures which trace the prices changes such that the revenue is maximized.

Figure 7 illustrates an application of the present invention, in determining a data flow to maximize an identifying characteristic. In this example, an AMFF is constructed using a piece-wise linear approximation between end points f2 210 and f1 200 and sample points 710, 720, 730. 740, 750, 760, and 770. Vector 780 represents a composite identifying characteristic, for example, revenue. That is, vector 780 is the composite revenue of the revenue generated by commodity data flows on flow F1 and commodity flow on flow F2. In accordance with the principle of the invention, the maximum revenue is achieved at the point that the revenue vector is perpendicular to AMFF. Figure

7 illustrates a graphic determination of the data flow allocation to achieve maximum revenue as vector 780 is transposed as vector 790 and vector 790 is perpendicular to line 800, which is tangent to AMFF. Numerous methods of determining perpendicular relationship being two components are known in the art. For example, using vector mathematics, two vectors are perpendicular when the "dot" product between the vectors is zero. The maximum revenue may be achieved when the data flow is allocated to achieve data flows along F1 and F2 that are represented by flow rates 810 and 820, respectively. Similarly, when the price changes, a new maximum may be quickly determined. As illustrated, maximum revenue using price vector 830 is achieved when the data flow is allocated along F1 and F2 to correspond to data flow rates represented by points 860 and 870, respectively.

The examples given herein are presented to enable those skilled in the art to more clearly understand and practice the instant invention. The examples should not be considered as limitations upon the scope of the invention, but as merely being illustrative and representative of the use of the invention. The examples should not be considered limitations upon the scope of the invention, but as merely being illustrative and representative of the use of the invention. Numerous modifications and alternative embodiments of the invention will be apparent to those skilled in the art in view of the foregoing description. Accordingly, this description is to be construed as illustrative only and is for the purpose of teaching those skilled in the art the best mode of carrying out the invention and is not intended to illustrate all possible forms thereof.